Syllabus (2016-1)

Course Title	FINANCIAL TECHNOLOGY	Course No.	38046
Department/ Major	Ewha School of Business	Credit	3
Class Time/ Classroom	Tue/ Thu: 3-3/ 2-2 (periods)		
Instructor	Seth H. Huang, PhD	Field of Finance	
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Office Hours/ Office Location	Office location is ESB420 Office hours: TBD		

1. Course Description

This course focuses on the recent financial technology (Fintech) and deep learning. Fintech has been developed widely in the past few years. The foundation, machine learning and big data analytic, have applications in search engine, image understanding, apps, medicine and etc. We aim to provide a solid understanding in how deep learning works in finance and applies in the modern era and the potential applications.

The foundation of these new applications can be attributed to deep neural network (aka “deep learning”) whose approaches have greatly advanced the performance of these state-of-the-art pattern recognition systems. This course discusses the background of the recent development, the mathematical foundation of deep neural network, with simple exercises based on Python.

During the 15-week course, students will learn to learn basic coding in Python, gain an understanding in neural network and the recent developments in the financial industry with respect to the use of this methodology.

This course seeks to provide a very basic foundation for programming as well as machine learning, both of which are the building blocks of fintech and big data analytic.

2. Prerequisites

- Basic calculus. Linear Algebra is a plus
- Basic probability and statistics
- Basic knowledge in optimization and linear/non-linear modeling
- Basic understanding in programming
- Sufficient and basic understanding of English language, verbal communication as well as writing.

3. Course Format

The course format consists of lectures and in-class activities. I will post on my Cyber Campus certain course materials, including notes, handouts, assignments/cases, and announcements. Please arrange to have access to the Cyber Campus.

Homework/project: Each assignment should be completed in teams. Write on each assignment paper: (a) class section; (b) assignment #; (c) full names

For details, please see Class Format and Grading Policy

Grading Policy

Grading Policy

The overall grade in this course will be determined based on the following elements:

4 assignments:	10%
Short Paper/ report:	10%
Presentation:	10%
Attendance:	10%
Midterm:	25%
Final Exam:	35%

Grade scale: The grades will be assigned in accordance to the policies set by Ewha School of Business.

4. Course Objectives

See Class Format

5. Evaluation System

I. Course Overview

The class will include textbook materials, cases and in-class activities. We will cover basic management principles as introduced in the textbook, and we will discuss relevant cases.

II. Course Materials and Additional Readings

1. Required Materials and Tools

Relevant materials will be posted on CyberCampus
ipython notebook/ python 2.7/ numpy package (web-based tool which will be explained in class)

2. Supplementary Materials

None.

3. Optional Additional Readings

None.

III. Course Policies

There will be no extra homework, make-up exams or assignments except for verifiable medical-reasons or official school activities, which will be submitted to ESB for review. Job interviews or vacations will not be valid reasons for missing classes or assignments.

Attendance sheet cannot be signed after 10 minutes into the class.

IV. Course Schedule

NOTE: The specific schedule is subject to change and designed under the assumption of 8 teams. The contents will not change.

Week	Date		
Week 1	03/01	Topics & Class Format	Class Introduction: Fintech and related buzzwords in recent years/ Basic command line/ terminal work

Week	Date		
		Materials & Assignments	None
Week 2	03/08	Topics & Class Format	Overview on deep learning and why it has been the focus in industry/ Basic Python structure
		Materials & Assignments	Assignment 1
Week 3	03/15	Topics & Class Format	Neural Network Foundations Part 1
		Materials & Assignments	None
Week 4	03/22	Topics & Class Format	Neural Network Foundations Part 2
		Materials & Assignments	None
Week 5	03/29	Topics & Class Format	Optimization
		Materials & Assignments	Assignment 2
Week 6	04/05	Topics & Class Format	Big data analytic and finance applications
		Materials & Assignments	None
Week 7	04/12	Topics & Class Format	Data versus Optimization Part 2 Essence in Python
		Materials & Assignments	None
Week 8	04/19	Topics & Class Format	Midterm Exam
		Materials & Assignments	None
Week 9	04/26	Topics & Class Format	Data versus Optimization Part 1
		Materials & Assignments	Assignment 3

Week	Date		
Week 10	05/03	Topics & Class Format	Training on MNIST data
		Materials & Assignments	None
Week 11	05/10	Topics & Class Format	The essence in financial data through training image recognition/ Machine learning applications in Fintech
		Materials & Assignments	None
Week 12	05/17	Topics & Class Format	Presentations
		Materials & Assignments	Assignment 4
Week 13	05/24	Topics & Class Format	Presentations
		Materials & Assignments	None
Week 14	05/31	Topics & Class Format	TBD
		Materials & Assignments	None
Week 15	06/07	Topics & Class Format	Final Exam
		Materials & Assignments	None
Makeup Classes	(mm/dd) / (mm/dd)	Topics & Class Format	N / A
		Materials & Assignments	N / A

V. Special Accommodations

* According to the University regulation #57, students with disabilities can request special accommodation related to attendance, lectures, assignments, and/or tests by contacting the course professor at the beginning of semester. Based on the nature of the students' requests, students can receive support for such accommodations from the course professor and/or from the Support Center for Students with Disabilities (SCSD).

* The contents of this syllabus are not final—they may be updated.